

Typification of infrageneric taxa in *Dendrobium* (Orchidaceae)

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Introduction

The nomenclature of infrageneric taxa in Orchidaceae on occasion borders on the chaotic. In the past, names were often proposed in a highly informal fashion, with little concern for typification, priority, precise circumscription, or even ranking. Such names were frequently applied to sets of species which had little in common beyond one or a few key characters. Those who used these names rarely cited their authors, while the circumscription of the taxa often varied considerably from one botanist to the next. It was not uncommon that earlier names were deliberately disregarded, to be replaced with new names that more or less covered the same groups. As a result, the nomenclature and systematics of many infrageneric taxa were, and sometimes still are, extremely confused.

In *Dendrobium*, one of the largest orchid genera with some 1500 species (Pridgeon *et al.*, in prep.), well over 200 subgenera, sections and subsections have been proposed. Examples of all the problems just mentioned can be found in abundance in this gargantuan taxon. Fortunately, many of these problems can be solved rather easily by carefully typifying the taxa involved. The International Code of Botanical Nomenclature (McNeill *et al.* 2005) includes two provisions that in certain cases make this process almost automatic:

1. "If in the protologue of the name of a genus or of any subdivision of a genus the holotype or lectotype of one or more previously or simultaneously published species name(s) is definitely included, the type must be chosen from among these types unless the type was indicated or designated by the author of the name." (Article 10.2) As a result, when an infrageneric taxon was initially proposed with only a single member species, then that species is automatically the type species of that taxon.
2. "When the epithet in the name of a subdivision of a genus is identical with or derived from the epithet of one of its constituent species, the type of the name of the subdivision of the genus is the same as that of the species name, unless the original author of the subdivisional name designated another type." (Article 22.6) Thus, for example, *Dendrobium nobile* Lindl. should be the type of section *Nobilia* (Pfitzer)

Abstract

In order to stabilise the nomenclature of infrageneric taxa in *Dendrobium*, type species are chosen for those taxa for which this has not been done previously. In all, 35 names are typified, including one genus name (*Onychium*), and assigned to sections of *Dendrobium* as recognised in *Genera Orchidacearum*.

Keywords: *Dendrobium*, infrageneric taxa, nomenclature, taxonomy

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Kraenzl. Presumably, when taking Article 10.2 into consideration, Article 22.6 only applies to species mentioned in the protologue by the original author of the subdivision. The extent to which an epithet can be termed 'derived' is not entirely obvious, since in Example 7 to Article 22.6, *Plantago* sect. *Oliganthos* is said to be derived from *P. pauciflora*, as the epithets share the same meaning. Does this imply that *Dendrobium* subsect. *Camptocentra* is derived from *D. hamatum*? Or is *Dendrobium* sect. *Angustifolia* derived from *D. bambusifolium*? In both, and similar, cases, I have decided that the derivation is not obvious enough, but there is clearly room for debate over this.

Over the years, most infrageneric taxa in *Dendrobium* have been typified. Sometimes the typifications were in conflict with these provisions, as for example when Brieger (1981) typified *Dendrobium* section *Eleutheroglossum* Schltr. with *Dendrobium canaliculatum* R.Br., while by Article 22.6 he should have chosen *D. eleutheroglossum* Schltr. Such mistakes are mostly easily remedied, however. There still remain some 35 taxa that have never been typified and where typification is not automatic. As at least some of these taxa are clearly polyphyletic according to current insights, typification is necessary to prevent nomenclatural problems in the future. The typifications that are proposed below were made with the following principle in mind:

Wherever possible and desirable, a type is to be chosen such that the newly typified taxon (NTT) will have the same type as an earlier taxon at the same rank. This is to ensure that the NTT will be an easily recognised synonym, and will not take precedence over another, later taxon, which may be or may have been in common use.

For instance, I have typified *Dendrobium* sect. *Onychium* Blume with *Onychium japonicum* Blume (= *D. moniliforme* (L.) Sw.). As a result, sect. *Onychium* reduces to a synonym of *Dendrobium* sect. *Dendrobium*, because *D. moniliforme* is the type species of *Dendrobium*. Had I chosen *Onychium crumenatum* (Sw.) Blume as the type species, then sect. *Onychium* would have gained priority over the frequently used later section name *Crumenata*. In the same way, another choice could have caused either sect. *Calcarifera*, sect. *Distichophyllae* or sect. *Platycaulon* to become a synonym of sect. *Onychium*.

A well-supported infrageneric classification

of *Dendrobium* is not yet available. Below I have indicated, between square brackets, the dispositions of the infrageneric taxa in question according to the forthcoming treatment in *Genera Orchidacearum* vol. 6 (Pridgeon *et al.*, in prep.), which is still to a considerable extent tentative and likely to be modified in light of future studies. In this treatment, a broad view of the genus is taken; DNA evidence indicates that in this view *Dendrobium* is a monophyletic group (Adams 2011; Schuiteman 2011; Schuiteman and Adams 2010). It is outside the scope of this article to circumscribe the sections adopted here; I refer to *Genera Orchidacearum*. In a few cases where the content of the sections differs significantly from traditional usage this is indicated in a note.

It will be seen that all names listed below are reduced to synonymy. However, some of the taxa at the rank of subsection may well become relevant in the future, as they will have priority at that rank.

This paper contains no new synonyms at species level. Species synonymy follows Govaerts (2011).

Typifications

***Dendrobium* sect. *Angustifolia* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 165 (1910).** Type species: *Grastidium salaccense* Blume = *Dendrobium salaccense* (Blume) Lindl. (here chosen) [= *Dendrobium* sect. *Grastidium* Blume]

Note – Kraenzlin cited this section as '*Angustifolia* s. [= sive] *Bambusacea*'. Possibly, the epithet *Bambusacea* is a misspelling of Ridley's section *Bambusifoliae*.

***Dendrobium* sect. *Bambusifoliae* Ridl., *Mat. Fl. Malay Penins.* 1: 31 (1907) (as '*Bambusaefoliae*').** Type species: *Dendrobium gemellum* auct. non Lindl.: Ridl. (p.p.) (= *D. salaccense* (Blume) Lindl.) (here chosen; see note) [= *Dendrobium* sect. *Grastidium* Blume]

Notes – In the protologue Ridley did not list *D. bambusifolium* Parish & Rchb.f. (a synonym of *D. salaccense* (Blume) Lindl.) among the species that he included in this section, although he may have had this species in mind when he invented the name. Section names like *Bambusifoliae*, *Foliosae*, *Distichophyllae*, etc., are not to be altered to *Bambusifolia*, *Foliosa*, etc., as they are not declensions of *Bambusifolium*, etc. (in which case they would be contrary to ICBN Article 21.2),

but rather arbitrarily composed names in the sense of ICBN Article 20.1. As noted by Holttum (1953), Ridley misapplied the name *D. gemellum* Lindl. to the species now called *D. salaccense* (Blume) Lindl., as well as to the closely related *D. indragiriense* Schltr. This is probably due to the fact that Lindley himself had mistakenly identified specimens of *D. salaccense* in his herbarium as *D. gemellum*. The true *D. gemellum*, which was based on *Pedilonum biflorum* Blume, does not belong in this section, but to sect. *Pedilonum* (or sect. *Calcarifera* in older classifications).

***Dendrobium* sect. *Brachyanthe* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 1: 446 (1912).** Type species: *Dendrobium bicameratum* Lindl. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Glomerata* subsect. *Brachycentra* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 101 (1910).** Type species: *Dendrobium minahassae* Kraenzl. (= *D. heterocarpum* Wall. ex Lindl.) (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Eudendrobium* subsect. *Calvae* Lindl., *J. Proc. Linn. Soc., Bot.* 3: 14 (1859).** Type species: *Dendrobium breviflorum* Lindl. (= *D. bicameratum* Lindl.) (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Glomerata* subsect. *Camptocentra* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 101 (1910).** Type species: *Dendrobium epidendropsis* Kraenzl. (= *D. ionopus* Rchb.f.) (here chosen) [= *Dendrobium* sect. *Pedilonum* Blume]

Notes – The type species of this subsection is a synonym of the type of subsect. *Macrocentra*. Section *Pedilonum* is here taken in the expanded sense as adopted in *Genera Orchidacearum*, which includes many, but by no means all, species formerly treated as members of sect. *Calcarifera*, such as *D. ionopus*. See also the note under sect. *Capitata*.

***Dendrobium* sect. *Capitata* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 130 (1910).** Type species: *Dendrobium purpureum* Roxb. (here chosen) [= *Dendrobium* sect. *Calyptrochilus* Blume]

Note – Section *Calyptrochilus* is here taken in the expanded sense as adopted in *Genera Orchidacearum*,

which includes many, but by no means all, species formerly treated as members of sect. *Pedilonum*, such as *D. purpureum*. See also the note under subsect. *Camptocentra*.

***Dendrobium* sect. *Eudendrobium* subsect. *Chrysostachya* Pfitzer in Engl. & Prantl, *Nat. Pflanzenfam.* II, 6: 173 (1889).** Type species: *Dendrobium fimbriatum* Hook. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Desmotrichum* Blume, *Tab. Pl. Jav. Orchid.* (1825) in *Clavis Generum* (nom. rej.).** Type species: *Desmotrichum angulatum* Blume = *Dendrobium barbatum* Breda (here chosen) [= *Dendrobium* sect. *Crinifera* Pfitzer]

Note – Since *Desmotrichum* (Blume) Blume is a nomen rejiciendum (ICBN Article 56.1), its implicit basionym (ICBN Article 33.3) *Dendrobium* sect. *Desmotrichum* Blume, is also a nomen rejiciendum.

***Dendrobium* sect. *Dianthe* Schltr. in K.Schum. & Lauterb., *Nachtr. Fl. Deutsch. Schutzgeb. Südsee* 150 (1905).** Type species: *Dendrobium gemellum* auct. non Lindl.: Ridl. (p.p.) (= *D. salaccense* (Blume) Lindl.) (here chosen) [= *Dendrobium* sect. *Grastidium* Blume]

Note – Schlechter (l.c.) writes that his section *Dianthe* could be regarded as an expanded version of Ridley's section *Gemella*. I have been unable to find a publication by Ridley in which that section is mentioned, and consider it a manuscript name. However, this reference to a section *Gemella* demonstrates that Schlechter included *Dendrobium gemellum* auct. non Lindl.: Ridl. in his section *Dianthe*, and this species is also mentioned in the protologue as *D. gemellum* Lindl. Evidently, Schlechter, like Ridley, at that time misinterpreted *D. gemellum* (see note under sect. *Bambusifoliae*).

***Dendrobium* sect. *Stachyobium* subsect. *Elatiores* Benth. & Hook.f., *Gen. Pl.* 3: 500 (1883).** Type species: *Dendrobium barbatulum* auct. non Batem.: Wight = *Dendrobium ovatum* (L.) Kraenzl. (here chosen) [= *Dendrobium* sect. *Fytchianthe* Schltr.]

Note – Hooker (1890) listed *D. barbatulum* auct. non Batem.: Wight as a synonym under *D. chlorops* Lindl., which, in turn, is a synonym of *D. ovatum*.

***Dendrobium* sect. *Eudendrobium* Lindl., *Paxton's Fl. Gard.* 1: 134 (1850-51) (nom. illeg.; ICBN Art. 21.3).**

Type species: *Epidendrum moniliforme* L. = *Dendrobium moniliforme* (L.) Sw. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Eugrastidium* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 188 (1910) (nom. illeg.; ICBN Art. 21.3).** Type species: *Grastidium rugosum* Blume = *Dendrobium rugosum* (Blume) Lindl. (here chosen) [= *Dendrobium* sect. *Grastidium* Blume]

Note – Kraenzlin did not include *D. salaccense* (Blume) Lindl., the type species of sect. *Grastidium*, in his section *Eugrastidium*.

***Dendrobium* sect. *Eudendrobium* subsect. *Fasciculata* Benth. & Hook.f., *Gen. Pl.* 3: 501 (1883).** Type species: *Epidendrum moniliforme* L. = *Dendrobium moniliforme* (L.) Sw. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Nobilia* subsect. *Fimbrilabia* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 27 (1910).** Type species: *Dendrobium devonianum* Paxton. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Eudendrobium* subsect. *Foliosae* Benth. & Hook.f., *Gen. Pl.* 3: 501 (1883).** Type species: *Grastidium salaccense* Blume = *Dendrobium salaccense* (Blume) Lindl. (here chosen) [= *Dendrobium* sect. *Grastidium* Blume]

***Dendrobium* sect. *Eudendrobium* subsect. *Grandia* Rchb.f. in Walp., *Ann. Bot. Syst.* 3: 532 (1853) (nom. invalid.).**

Note – As this is a nomen nudum, no typification is required. The two species listed by Reichenbach both belong to *Dendrobium* sect. *Dendrobium*.

***Dendrobium* sect. *Hemiphylla* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 201 (1910).** Type species: *Macrostomium aloifolium* Blume = *Dendrobium aloifolium* (Blume) Lindl. (here chosen) [= *Dendrobium* sect. *Aporum* Blume]

***Dendrobium* sect. *Holophylla* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 201 (1910).** Type species: *Aporum lobatum* Blume = *Dendrobium lobatum* (Blume) Miq. (here chosen) [= *Dendrobium* sect. *Aporum* Blume]

***Dendrobium* sect. *Nobilia* subsect. *Integrilabia* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 27 (1910).**

Type species: *Dendrobium nobile* Lindl. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

Note – Kraenzlin did not use *Nobilia* as the name of this subsection, nor was he required to do so (ICBN Art. 22.1).

***Dendrobium* sect. *Leiotheca* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 250 (1910).** Type species: *Latouria spectabilis* Blume = *Dendrobium spectabile* (Blume) Miq. (here chosen) [= *Dendrobium* sect. *Latouria* (Blume) Miq.]

***Dendrobium* sect. *Glomerata* subsect. *Macrocentra* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 103 (1910).** Type species: *Dendrobium ionopus* Rchb.f. (here chosen) [= *Dendrobium* sect. *Pedilonum* Blume]

Notes – See the notes under subsect. *Camptocentra*.

***Dendrobium* sect. *Glomerata* subsect. *Mesocentra* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 102 (1910).** Type species: *Dendrobium glomeratum* Rolfe. (here chosen) [= *Dendrobium* sect. *Calyptrochilus* Schltr.]

Note – See the note under sect. *Capitata*.

***Onychium* (Blume) Blume, *Bijdr.* 323 (1825).** Type species: *Onychium japonicum* Blume (= *Dendrobium moniliforme* (L.) Sw.) (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Onychium* Blume, *Tab. Pl. Jav. Orchid.* (1825) in *Clavis Generum*.** Type species: *Onychium japonicum* Blume (= *Dendrobium moniliforme* (L.) Sw.) (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Aurea* subsect. *Percnochila* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 40 (1910).** Type species: *Dendrobium aureum* Lindl. (= *D. heterocarpum* Wall. ex Lindl.) (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Planifolia* Rchb.f. in Walp., *Ann. Bot. Syst.* 6: 282 (1861).** Type species: *Dendrobium nobile* Lindl. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Ceratobium* subsect. *Platypetala* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 139 (1910).** Type species: *Onychium affine* Decne. = *Dendrobium*

affine (Decne.) Steud. (here chosen) [= *Dendrobium* sect. *Phalaenanthe* Schltr.]

***Dendrobium* sect. *Eudendrobium* subsect. *Pycnostachyae* Benth. & Hook.f., *Gen. Pl.* 3: 500 (1883).** Type species: *Dendrobium purpureum* Roxb. (here chosen) [= *Dendrobium* sect. *Calyptrochilus* Schltr.]

Note – See the note under sect. *Capitata*.

***Dendrobium* sect. *Rhopalanthe* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 1: 449 (1912).** Type species: *Dendrobium crumenatum* Sw. (here chosen) [= *Dendrobium* sect. *Aporum* Blume]

Note – Section *Crumenata*, of which sect. *Rhopalanthe* is a homotypic synonym, is in Pridgeon *et al.* (in prep.) included in a broadly defined sect. *Aporum*.

***Dendrobium* sect. *Strongyle* Lindl., *Paxton's Fl. Gard.* 1: 134 (1850-51).** Type species: *Onychium subulatum* Blume = *Dendrobium subulatum* (Blume) Lindl. (lectotype chosen by Brieger (1981), who mistakenly wrote '*Onychium undulatum*', a name which does not exist; *Onychium subulatum* is the only species of *Onychium* which belongs to sect. *Strongyle*) [= *Dendrobium* sect. *Aporum* Blume]

***Dendrobium* sect. *Aurea* subsect. *Subcylindracea* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 41 (1910).** Type species: *Dendrobium chrysanthum* Lindl. (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Superbientia* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 257 (1910).** Type species: *Dendrobium johnsoniae* F.Muell. (here chosen) [= *Dendrobium* sect. *Latouria* (Blume) Miq.]

Note – *Dendrobium* × *superbiens* Rchb.f. cannot be considered the type species in the sense of ICBN Art. 22.6, as it is a hybrid, not a species, even though Kraenzlin considered it as such. He listed several other species in this ill-defined section, including members of section *Phalaenanthe* but also of sections *Latouria*, *Formosae* and even *Pedilonum*. Choosing one of the *Phalaenanthe* species would have given sect. *Superbientia* priority over sect. *Phalaenanthe*.

***Dendrobium* sect. *Trachytheca* Kraenzl. in Engl., *Pflanzenr.* IV. 50. II. B. 21: 243 (1910).** Type species: *Dendrobium macrophyllum* A.Rich. (here chosen) [= *Dendrobium* sect. *Latouria* (Blume) Miq.]

***Dendrobium* sect. *Eudendrobium* subsect. *Trilobata* Pfitzer in Engl. & Prantl, *Nat. Pflanzenfam.* 2, 6: 174 (1889).** Type species: *Dendrobium macarthiae* Thwaites (here chosen) [= *Dendrobium* sect. *Dendrobium*]

***Dendrobium* sect. *Virgatae* Hook.f., *Fl. Brit. Ind.* 5: 711 (1890).** Type species: *Dendrobium crumenatum* Sw. (here chosen) [= *Dendrobium* sect. *Aporum* Blume]

Note – See note under sect. *Rhopalanthe*.

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